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QUARTERLY REPORT

FOR JANUARY 1993 THROUGH MARCH 1993

Operable Unit 2
IM/IRA Surface Water
Field Treatability Unit

Prepared By

Environmental Remediation
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Chains of Custody # RE00353 through # RE00411

(Corresponding Sample Numbers # FT00450REU2 through # FT00514REU2)

1.0 Introduction

This report covers operations of the Field Treatability Unit (FTU) for the first quarter of 1993. It is the second Quarterly Report to be prepared for this facility.

The FTU is being operated as an Interim Measure/ Interim Remedial Action (IM/IRA) under the Plan released by Department of Energy (DOE) on May 8, 1991. The FTU began operation as Phase I for treatment of surface water from a portion of the South Walnut Creek drainage at OU2 for removal of volatile organic compounds (VOCs) of concern. The system consisted of collection facilities at Surface Water locations SW-59 and SW-61, equalization tankage, bag pre-filters, granular activated carbon (GAC) treatment units and insulated, heat traced transfer piping, pumps and controls. Phase I was conducted between May 13, 1991 and April 27, 1992 at which time the Radionuclides Removal System (RRS) was implemented under the Phase II program. The RRS added provisions for treatment of radionuclides and metals by pH adjustment, chemical precipitation and cross-flow membrane filtration. The RRS replaced bag pre-filters as pretreatment to the GAC system. Detailed descriptions of the FTU and its operation can be found in the IM/IRAP, the Field Sampling Plan (FSP), and related documentation.

2.0 Sampling and Reporting of Data

The data upon which this report is based was obtained from RFEDS and cover the sampling period beginning May 5, 1992 to February 9, 1993. Sample periods vary because results have not uniformly been returned on the same schedule by the different laboratories.

2.1 Chains of Custody and Sample Numbers

A tabulation of samples, analytes and chains of custody (COCs) taken within the 1st Quarter period is shown in Attachment A.

2.2 Flow Data, Chemical Usage and Sludge Generation

Treated effluent totalled 1,844,500 gallons during the quarter. This is an average of 14 gallons per minute (gpm) compared to 60 gpm design capacity. Chemical usage during the quarter is as follows: lime, 6,000 pounds; sulfuric acid, 376 gallons; ferric sulfate, 166 pounds; powdered activated carbon, 500 pounds; hydrogen peroxide, 129 gallons. Eight thousand gallons of diesel fuel was required for operation and nine thousand pounds of sludge (18 drums) was generated during this period.

2.3 Attainment of ARARs for Treated Effluent

The FTU discharged treated effluent below the ARARs for radionuclides, metals and volatile organic compounds at all times during the 1st quarter except for Aluminum and Strontium. The data references are presented below are on file and can be provided on request.

2.3.1 Radionuclides

Both total and dissolved radionuclides were at all times discharged at concentration levels below ARARs. Available data include Dissolved Radionuclides (DRADS) analytical results for 20 sampling events from May 5, 1992 through January 19, 1993. Total Radionuclide analytical data (TRADS) were reviewed for 32 sampling events for the same period as above.

2.3.2 Metals

ARARs were achieved in all discharges for metals except Aluminum (Al). Analytical data for total metals include 33 sampling events between May 5, 1992 and February 9, 1993. Aluminum (Al) concentrations exceeded the treatment goal, however the system is not designed to treat this analyte. Analytical data for dissolved metals includes data for 24 sampling events for the same period as above. Exceedances are shown for Al.

2.3.3 *Volatile Organic Compounds*

Discharge of VOCs in treated effluent at no time exceeded ARARs. Sampling was conducted six times between May 12, 1992 and June 16, 1992 and analyzed by CLP protocols. Twenty-four sampling events from June 23, 1992 to February 9, 1993 were analyzed by EPA Method 524.2 to attain greater sensitivity. Since this protocol does not include acetone, subsequent analysis were performed using Method 524.2 plus acetone as an add-on to the basic GC-MS method.

3.0. System Operation and Maintenance

Overall, the system functioned very well, was reliable, and satisfied the criteria delineated in the IM/IRAP.

Several operational improvements were implemented during this period. These include the following:

3.1. Surface Water Collection

During the last three months, the surface water collection and pumping system has operated well. This period represented the most severe weather of the year but the system was dependable and responded well to the conditions. The following problems were experienced and resolved as need:

- On February 17, 1993, the transfer line between the 10,000 gallon equalization tank and the raw water pump froze. The process system was inoperative for four hours while the subcontractor used a steam cleaner to thaw the line and return to operations.

- On March 9, 1993, a leak developed in the raw water transfer line to the equalization tank. An estimated 50 gallons of raw water was released and contained. Repairs were completed within three hours and the system was returned to operation.

3.2 Radionuclide Removal System

During the last three months, the Radionuclide Removal System (RRS) produced an acceptable effluent and functioned as it was designed. Due to a period of much precipitation, flows and turbidity were much higher than average. As a result, some problems were experienced. The following briefly summarizes those events:

-During the week of March 29, 1993, the facility received extremely high flows and high turbidity. As a result, problems were experienced with clogging of the microfilter. The routine cleaning procedure was used, but did not perform adequately. As a result of the solution to this problem, chemical dose became more scientific in relation to the concentration of incoming solids. Increased turbidity, due to rain or snow melt, is now countered with quantitatively increased iron and lime. This has the effect of maintaining treatment flow rate and maintaining or extending membrane cleaning intervals because plugging is avoided.

-On March 2, 1993, the Program Logic Computing (PLC) System that regulated the cleaning system malfunctioned. The vendor was brought in to reprogram the PLC which was corrected in four hours. No downtime resulted from the situation. The cause of the problem was diagnosed as static electricity developing within the PLC.

3.3 Granular Activated Carbon

During the first quarter of 1993, the granular activated carbon (GAC) system functioned well and without incident. Two minor leaks that developed were repaired by the subcontractor. The leaks were located within secondary containment.

3.4 Residuals Handling

During the period, three types of residuals were generated (sludge cake, spent granular activated carbon, and PPE).

3.4.1 Sludge Cake

As discussed earlier, 9000 lbs of sludge cake (18 drums) was produced during the first quarter of 1993. The sludge processing system functioned well and as designed. Standard Operating Procedures (SOP) and requirements were followed to package and provide storage for the low-level mixed waste.

3.4.2 Spent Granular Activated Carbon

One Cyclesorb unit containing 2000 lbs of spent GAC was generated and is being stored in EM 1890 awaiting transfer to Interim Storage Area 18.03.

3.4.3 PPE

The health and safety plan was followed during the period while subcontract employees performed the related operating functions. As a result, 182 PPE changes were generated and properly dispositioned.

3.5 Power Generator

The OU2-250 KW generator provided utility power during the period. This was not without incident, however, and a temporary diesel generator was brought to the site and placed into service. The 250 KW generator was diagnosed as needing an overhaul, which was performed in late January, 1993. Work to provide plant power to the OU2 facility is progressive but is not expected to be completed until late summer. Several problems occurred to the unit after it was returned to service. All of these problems were repaired under warranty.

The following problem occurred during the period:

-On January 14, 1993, a diesel fuel spill occurred releasing 25 gallons of fuel. RFP personnel obtained samples of the contaminated area and obtained analyses of these samples. The subcontractor removed the contaminated soil and placed it into a total of 17 drums. Results from the analyses indicate the material is not a RCRA waste and is awaiting dispositioning.

4.0. Accomplishments

The following is a miscellaneous update relative to the system and the previous quarterly report:

4.1 Pu Deposition in Transfer Piping

Water samples for analyzing deposition of Pu in the transfer piping have been sent to LANL and we are awaiting analytical results.

4.2 Particle Counting Study

Studies of filtration efficiencies using particle counting were completed according to the work plan. A report is being written which will provide results and conclusions of the study.

4.3 Bulk Back Bins

On March 8, 1993, four bulk back bins (BBB's) were transferred from OU2 to Interim Storage Area 18.03 (Tent 1). Storage of the containers complies with RCRA requirements.

4.4 Virgin Granular Activated Carbon

On March 17, 1993, virgin granular activated carbon was placed into the four empty Cyclesorb units. The four units are on standby and will be used as needed.

4.5 New Item Description Codes

New Item Description Codes (IDC) have been obtained for sludge, Phase I GAC, and spent filter socks. These codes have been used to revise the WSRIC document for OU2 facility residuals.

4.6 Filter Sock Drums

On March 12, 1993, the seventeen grey drums containing waste filter socks were repackaged into white drums and placed into Interim Storage Area No. 18.04.

4.7 Decon of Empty Drums

On April 14, 1993, the empty grey drums referenced above were decontaminated at the temporary decon pad and returned for recycling.

4.8 Treatability Study Report

A preliminary draft report has been prepared and distributed for internal review.

5.0 Work Anticipated for Second Quarter 1993

Reference was made earlier in Section 3.0 to ongoing responses to problems. In addition, the following is contemplated:

5.1 Treatability Study Report Preparation

The Draft and Final Phase II Treatability Study Report will be completed in the next quarter. The Draft is due to the EPA and CDH on May 18, 1993 and the Final is due on July 13, 1993. The document is on schedule to meet these deadlines.

5.2 Transition to a New Subcontractor

Transition to a new operating subcontractor at the OU2 treatment system will be completed on April 30, 1993. The new subcontractor has been in full "responsible charge" since April 19, 1993.

5.3 Spent GAC Storage

The three spent GAC/Cyclesorb containers being stored in the EM 1890 Storage Area will be transferred to the Interim Storage Area 18.03 (Tent).

5.4 Disposition of Process Liquids

All excess process liquids being held at OU2 will be transferred from the area to facilities for dispositioning.

6.0 Reports and Correspondences

Reports and correspondence this period are as follows and include:

6.1 Correspondences

Six items of correspondence during the period are:

-Letter to Riedel Environmental Services dated February 11, 1993 regarding the OU2 Surface Water IM/IRA-SW132

-Letter to Riedel Environmental Services dated March 5, 1993 regarding the OU2 Surface Water IM/IRA-SW132

-Memo to K. F. Lenarcic dated March 30, 1993 regarding permission to transfer Cyclesorb containers from EM1890 to Unit 18.03

-letter to Riedel Environmental Services dated April 12, 1993 regarding the OU2 Surface Water IM/IRA-SW132

6.2 Reports

No reports were issued during the quarter.

7.0 Summary and Conclusions

During this period, management of this FTU resulted in attainment of ARARs in treated effluent for all analytes except for Al. Also, development of improved operation and maintenance procedures to achieve increased reliability, improved characterization of influent surface water and better characterization of waste materials to govern their disposal was achieved.

More work needs to be done in selected areas, and effort will be given when time permits to accomplish this goal.

ATTACHMENT A

OU2-FTU

Sample Date	COC Number (RE-XXXXX)	Sample Number (FT XXXXXREU2)	Sample Type	Anaylsis Requested
01/05/93	RE-00412	00515	Water	RAD Screen,1
		00516	Water	
"		00517	Water	
"		00518	Water	
"		00519	Water	"
01/05/93	00413	00515	Water	1
		00516	Water	1
		00517	Water	1
		00518	Water	1
		00519	Water	1
01/05/93	00414, 00415	00515	Water	1
		00516	Water	1
		00517	Water	1
		00518	Water	1
		00519	Water	1
01/12/93	00416	00520	Water	RAD Screen, 1
		00521	Water	"
		00522	Water	"
		00523	Water	"
01/12/93	00417	00520	Water	1
		00521	Water	1
		00522	Water	1
		00523	Water	1
01/12/93	00418, 00419	00520	Water	1
		00521	Water	1
		00523	Water	1
01/19/93	00420	00524	Water	RAD Screen, 1
		00525	Water	"
		00526	Water	"
		00527	Water	"
01/19/93	00421	00524	Water	1
		00525	Water	1
		00526	Water	1
		00527	Water	1
01/19/93	00422, 00423	00524	Water	1
		00525	Water	1
		00526	Water	1
		00527	Water	1
01/21/93	00425	00528	Sludge	2
		00529	Sludge	2

01/20/93	00424	00528	Sludge	2	
		00529	Sludge	2	
01/21/93	00426	00530	Sludge	2	
01/21/93	00427	00530	Sludge	2	
01/26/93	00428	00531	Water	Rad Screen, 1	
		00532	Water	"	
		00533	Water	"	
		00534	Water	"	
01/26/93	00429	00531	Water	1	
		00532	Water	1	
		00533	Water	1	
		00534	Water	1	
01/26/93	00430, 00431	00531	Water	1	
		00532	Water	1	
		00534	Water	1	
01/28/93	00432	00535	Water	1	
		00536	Water	1	
01/28/93	00433	00537	Pipe	2	
		00538	Pipe	2	
02/02/93	00434	00539	Water	RAD Screen, 1	
		00540	Water	"	
		00541	Water	"	
		00542	Water	"	
02/02/93	00435, 00436	00539	Water	1	
		00540	Water	1	
		00541	Water	1	
		00542	Water	1	
02/02/93	00437	00539	Water	1	
		00540	Water	1	
		00541	Water	1	
		00542	Water	1	
02/04/93	00438	00543	Sludge	1	
02/04/93	00439	00543	Sludge	2	
02/05/93	00440	00544	Sludge	2	
02/05/93	00441	00544	Sludge	1	
02/08/93	00442	00545	Water	1	
		00546	Water	1	
		00547	Water	1	
		00548	Water	1	
02/08/93	00443	00545	Water		
1		00546	Water	1	
		00547	Water	1	
		00548	Water	1	
02/09/93	00444	00545	Water	1	
		00546	Water	1	
02/09/93	00445	00548	Water	1	
02/15/93	00446	00549	Carbon	2	
02/15/93	00447	00549	Carbon	2	
		00549A	Carbon	2	

02/16/93	00448	00550	Water	RAD Screen, 1			
		00551	Water	"			
		00552	Water	"			
		00553	Water	"			
02/16/93	00449	00550	Water	1			
		00551	Water	1			
		00552	Water	1			
		00553	Water	1			
02/16/93	00450	00550	Water	1			
		00551	Water	1			
		00553	Water	1			
02/16/93	00451	00554	Sludge	2			
02/16/93	00452	00554	Sludge	1			
02/17/93	00453	00555	Sludge	2			
02/17/93	00454	00555	Sludge				
1	02/19/93	00455	00556	Sludge	2		
02/19/93	00456	00556	Sludge	2			
02/19/93	00457	00557	Sludge	2			
02/19/93	00458	00557	Sludge	2			
02/23/93	00459	00558	Water	RAD Screen,			
1		00559	Water	"			
		00560	Water	"			
		00561	Water	"			
		00562	Water	"			
02/23/93	00460	00558	Water	1			
		00559	Water	1			
		00560	Water	1			
		00561	Water	1			
		00562	Water	1			
02/23/93	00461	00558	Water	1			
		00559	Water	1			
		00560	Water	1			
		00561	Water	1			
		00562	Water	1			
02/25/93	00462	00563	Sludge	1			
02/25/93	00463	00563	Sludge	2			
03/02/93	00464	00564	Water	RAD Screen, 1			
		00565	Water	"			
		00566	Water	"			
		00567	Water	"			
03/02/93	00465	00564	Water	1			
		00565	Water	1			
		00566	Water	1			
		00567	Water	1			
03/02/93	00466	00564	Water	1			
		00565	Water	1			
		00567	Water	1			
03/04/93	00467	00568	Sludge	1			
03/04/93	00468	00568	Sludge	2			

03/09/93	00469	00569	Water	RAD Screen, 1
		00570	Water	"
		00571	Water	"
		00572	Water	
"	03/09/93	00470	00569	Water 1
		00570	Water	1
		00571	Water	1
		00572	Water	1
03/09/93	00471	00569	Water	1
		00570	Water	1
		00571	Water	1
		00572	Water	1
03/16/93	00472	00573	Water	RAD Screen, 1
		00574	Water	"
		00575	Water	"
		00576	Water	"
03/16/93	00473	00573	Water	1
		00574	Water	1
		00575	Water	1
		00576	Water	1
03/16/93	00474	00573	Water	1
		00574	Water	1
		00576	Water	1
03/16/93	00475	00577	Sludge	2
03/16/93	00476	00577	Sludge	1
03/16/93	00477	00578	Sludge	2
03/16/93	00478	00578	Sludge	1
03/17/93	00479	00579	Sludge	2
03/17/93	00480	00579	Sludge	1
03/17/03	00481	00580	Sludge	2
03/17/93	00482	00580	Sludge	1
03/23/93	00483	00581	Water	RAD SCreen, 1
		00582	Water	"
		00583	Water	"
		00584	Water	"
03/23/93	00484	00581	Water	1
		00582	Water	1
		00583	Water	1
		00584	Water	1
03/23/93	00485	00581	Water	1
		00582	Water	1
		00584	Water	1
03/25/93	00487	00585	Sludge	2
03/25/93	00486	00585	Sludge	1

03/29/93	00488	00585	Sludge	2
03/29/93	00489	00586	Carbon	1
03/31/93	00490	00587	Water	RAD Screen, 1
		00588	Water	"
		00589	Water	"
		00590	Water	"
03/31/93	00491	00587	Water	1
		00588	Water	1
		00589	Water	1
		00590	Water	1
03/31/93	00492	00587	Water	1
		00588	Water	1
		00590	Water	1